UNIVERSITY OF ILLINOIS BULLETIN

ISSUED WEEKLY BY THE UNIVERSITY

VOL. X APRIL 14, 1913 No. 29

[Entered as second-class matter, December 11, 1912, at the Post Office at Urbana, Illinois, under the Act of August 24, 1912.]

DEPARTMENT OF

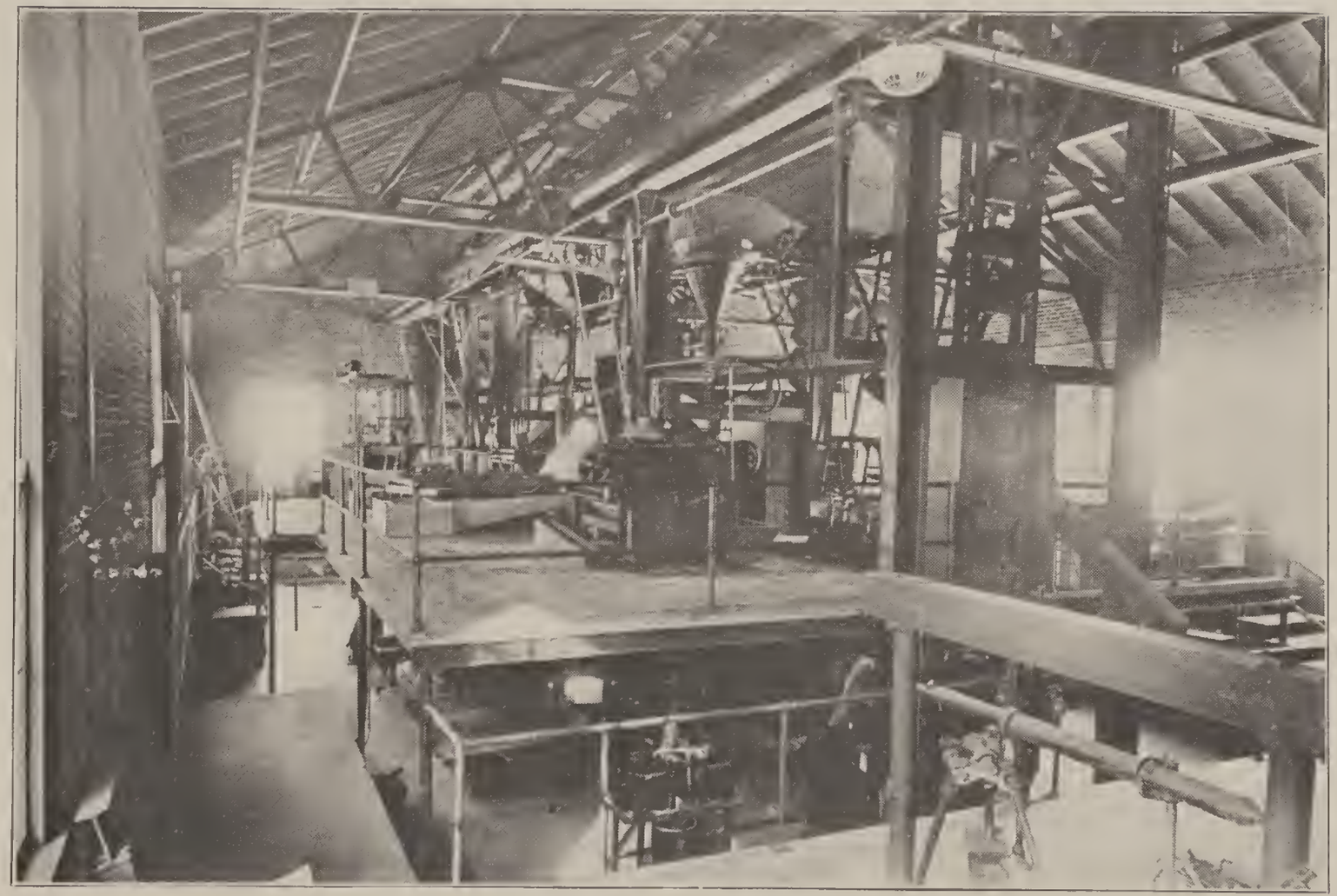
MINING ENGINEERING

UNIVERSITY OF ILLINOIS

DEPARTMENT OF
MINING ENGINEERING
UNIVERSITY OF ILLINOIS

ILLUSTRATIONS *of the* WORK *and* EQUIPMENT

PUBLISHED BY THE UNIVERSITY OF ILLINOIS
URBANA-CHAMPAIGN



THE COAL WASHING AND ORE DRESSING LABORATORY

This Laboratory occupies a space 42 feet by 59 feet.

HISTORY

The Department of Mining Engineering of the University of Illinois was established by the Legislature as the result of a movement inaugurated at a Fuel Conference held at the University in March, 1909. At that Conference, a committee representing the mine operators, the United Mine Workers, the State Mine Inspectors and the manufacturers of the State, was appointed to urge upon the Legislature the importance of providing adequate instruction in Mining Engineering at the University of Illinois. In 1911, $25,000.00 was appropriated for equipment which has now been installed and is illustrated in the present circular.

COURSES

The course in Mining Engineering during the freshman and sophomore years includes the same elementary training in languages, mathematics, mechanics, drafting, physics and chemistry as the other engineering courses, with the addition of elementary geology and the elements of mining such as blasting, drilling, timbering, shaft-sinking and tunneling.

The general principles common to all branches of mining engineering, together with surveying, steam engineering, electrical engineering, advanced chemistry and geology are given during the junior year. During the senior year the student has the option of specializing in coal mining, metalliferous mining, metallurgy or mining geology.

Not only do the students of this department have all the advantages of a Mining School, but they have also the benefits, both cultural and technical, to be derived from an Engineering College of the highest standing, and from a great University.

EQUIPMENT

The offices, lecture rooms, drafting room, museum and two laboratories for safety lamps and mine gases, occupy the second floor of the Transportation Building shown on the front cover. This building, completed in 1912, is a three-story fire-proof building 143 feet long and 65 feet wide.

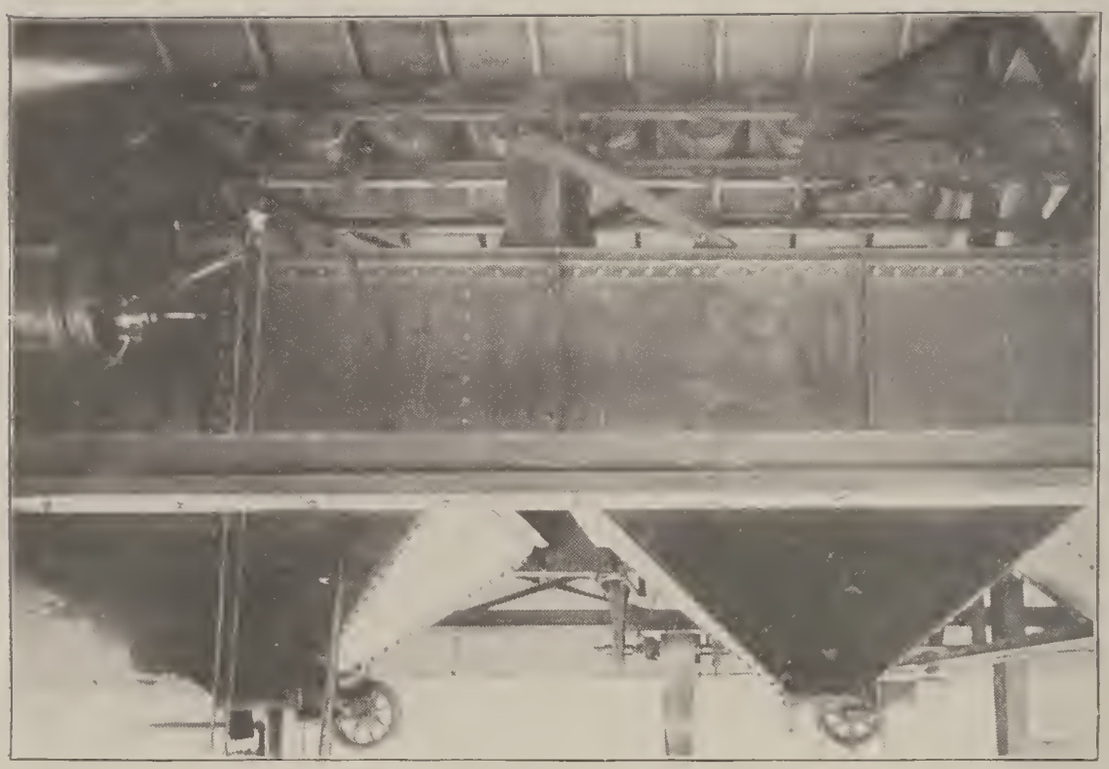
The Mining Laboratory is a brick structure 42 feet by 100 feet in size, divided into four parts: a chemical laboratory, a drilling and blasting laboratory, a mine rescue chamber, and a coal washing and ore concentration laboratory. On the second floor above the chemical laboratory are a computation room, an office, and a store room.

THE MINING LABORATORY

COAL WASHING AND ORE DRESSING LABORATORY

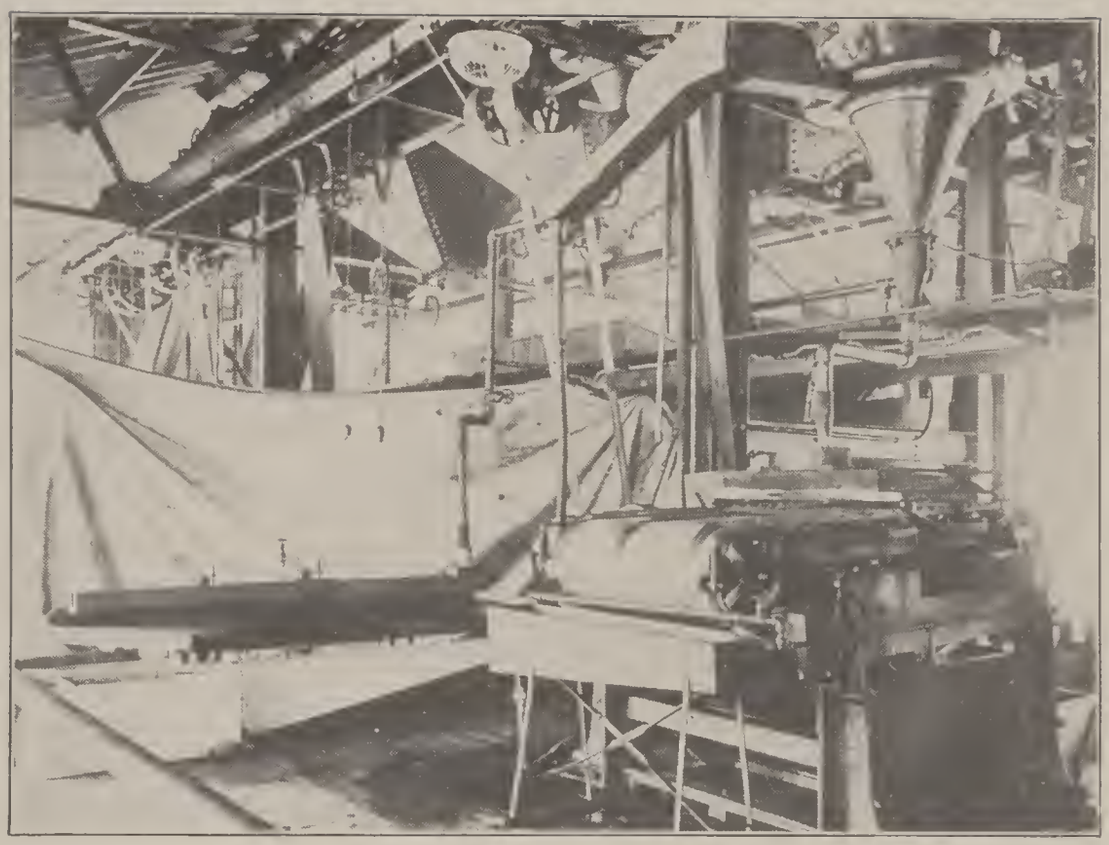
The sampling room contains a vibrating screen; a complete set of hand screens with screen shaker; bucking boards; a small roll jaw crusher and a disc pulverizer; also special devices for grinding down coal samples. Sunk in the floor are two steel plates for quartering.

The crushing and weighing room contains a pair of 18-in. by 20-in. coal rolls, a gyratory crusher, a pair of 12-in. by 12-in. ore rolls, and dormant and platform scales.

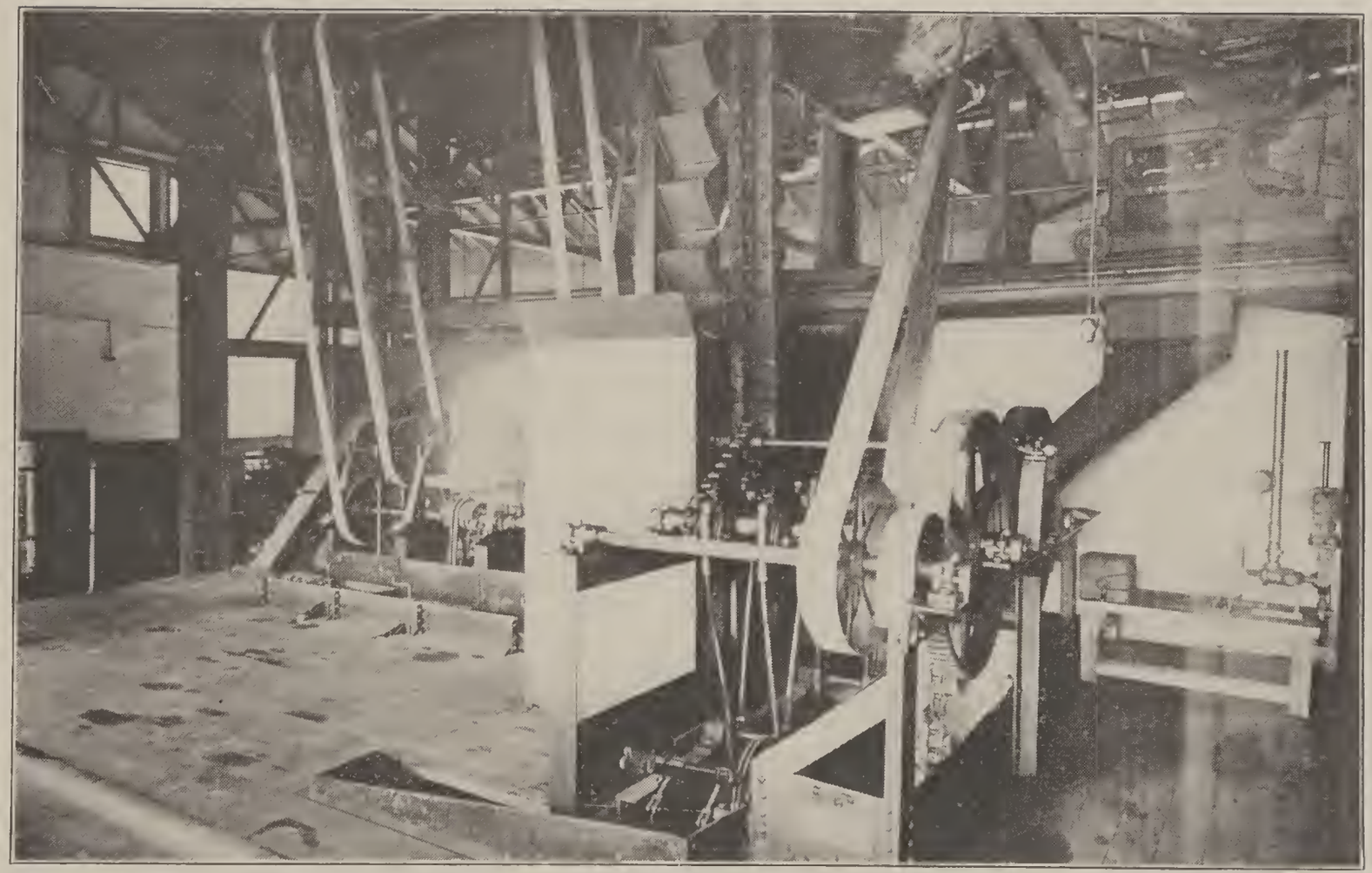


A pivoted bucket carrier travels horizontally below the floor in a pit covered by movable plates, rises along the end of the building and returns overhead, dumping automatically into bins, each holding 5 tons of coal or 10 tons of ore.

The revolving screen and the shaker screen made in two sections are inclosed and deliver to bins underneath. A vibrating screen is used for very fine material.

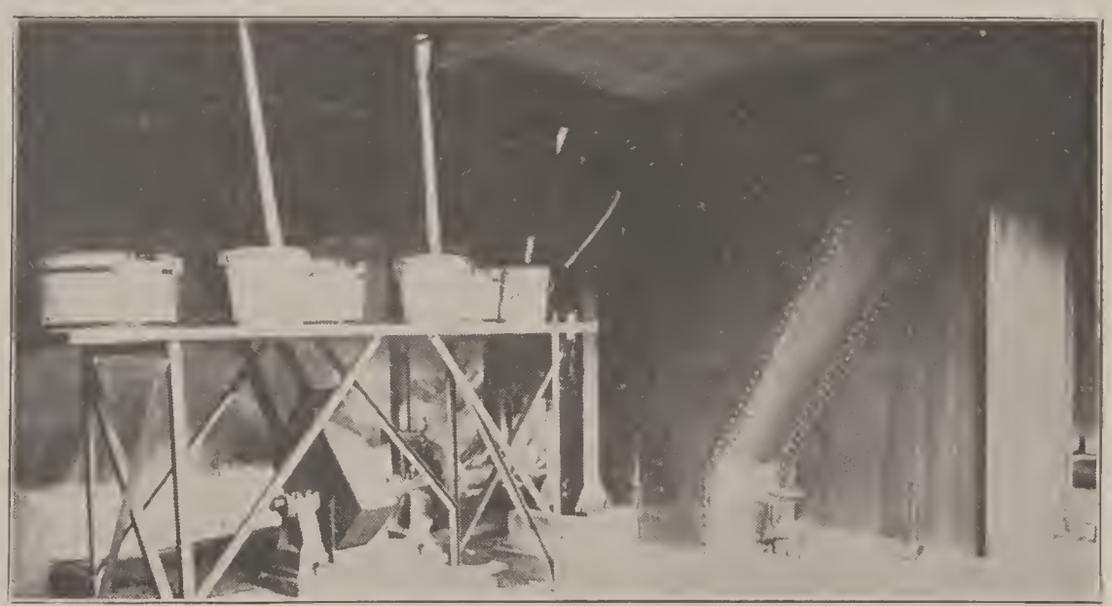


The overflow from the stamp battery is elevated by a sand pump and delivered to a 2-ft. cone classifier which discharges below upon a jerking table. The overflow from the classifier goes to a 3-ft. cone classifier which discharges below upon a vanner, while the overflow from the second classifier passes to a slimer or directly to a tank placed below the mezzanine floor.



Coal or ore may be washed on either a three-compartment new century jig, a Stewart jig, or a Richards pulsator jig, all of which deliver into an overhead bin. A traveling Avery scale automatically weighs the material from any overhead bin before it is delivered to the screens, jigs or stamp battery.

The tailings from the tables, vanner and slimer pass into four callow tanks hung below the mezzanine floor, and beneath each tank is a steam drying table upon which the thickened tailings can be drawn and dried.

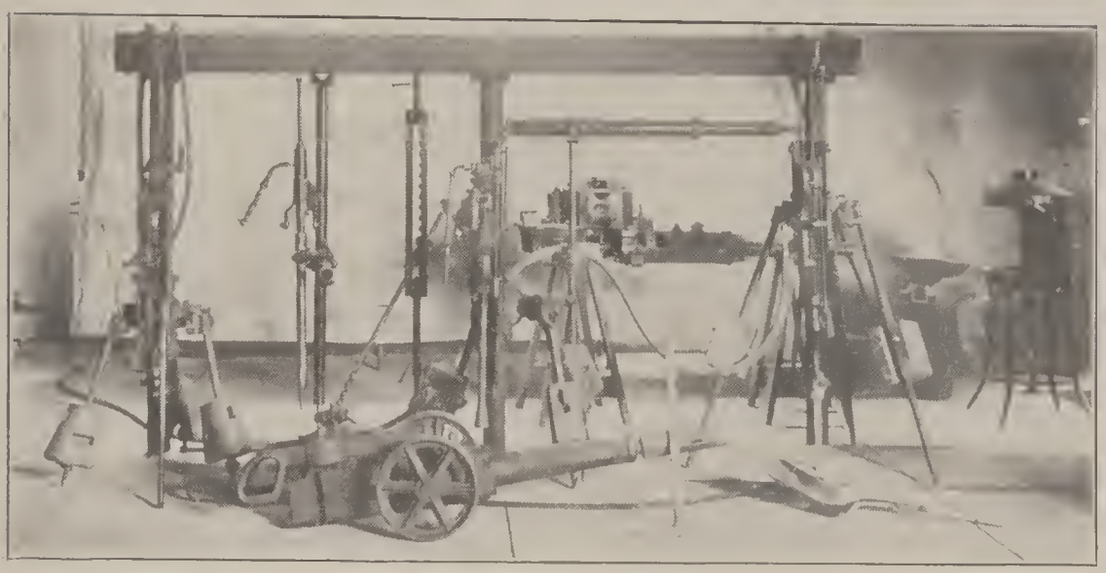


Water in the jigs is circulated by a centrifugal pump situated on the ground floor and beneath an elevated table that holds receptacles for the hutch and heavy products from the three-compartment jig.

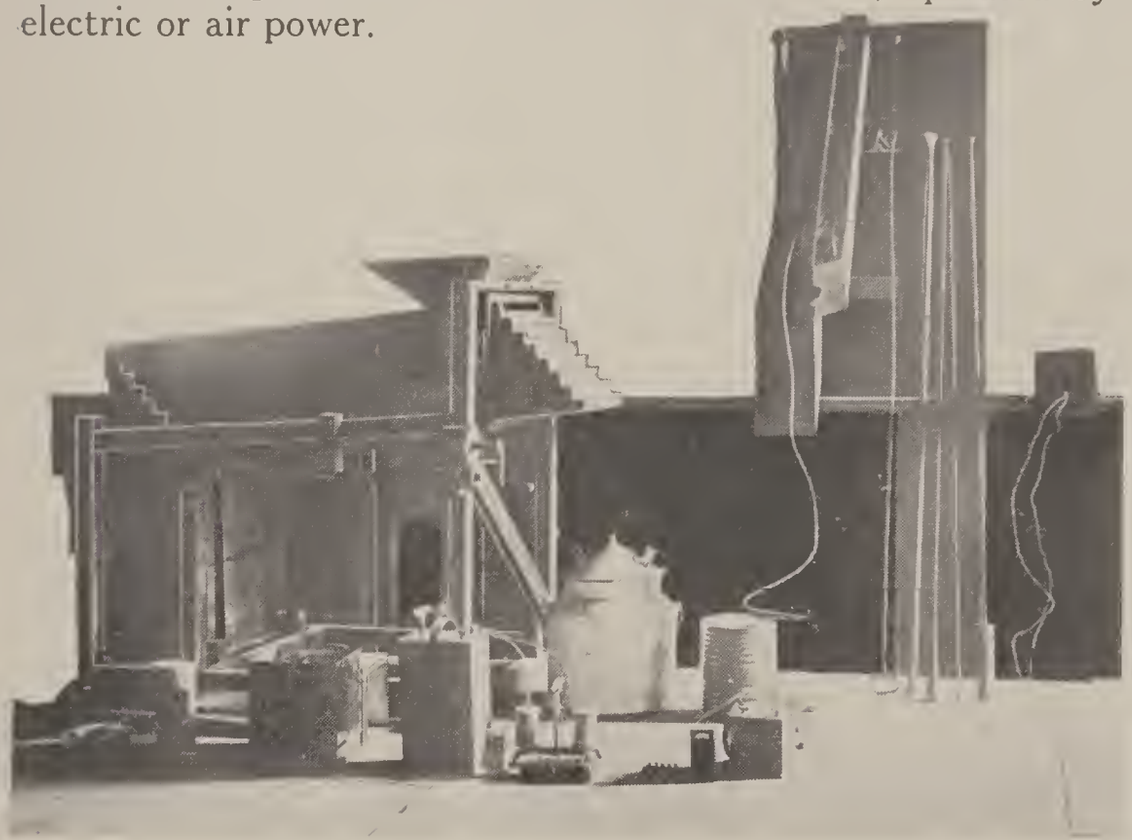
CHEMICAL LABORATORY

The chemical laboratory is equipped for the analysis and assay of coal and ore. It also contains appliances for the testing of ores and coal on a small scale, such as hand jigs, classifiers, sink and float devices, and specific gravity balances.

DRILLING AND BLASTING LABORATORY



A block of concrete sunk in the floor is used for testing and demonstrating the use of drills and coal cutters, operated by electric or air power.



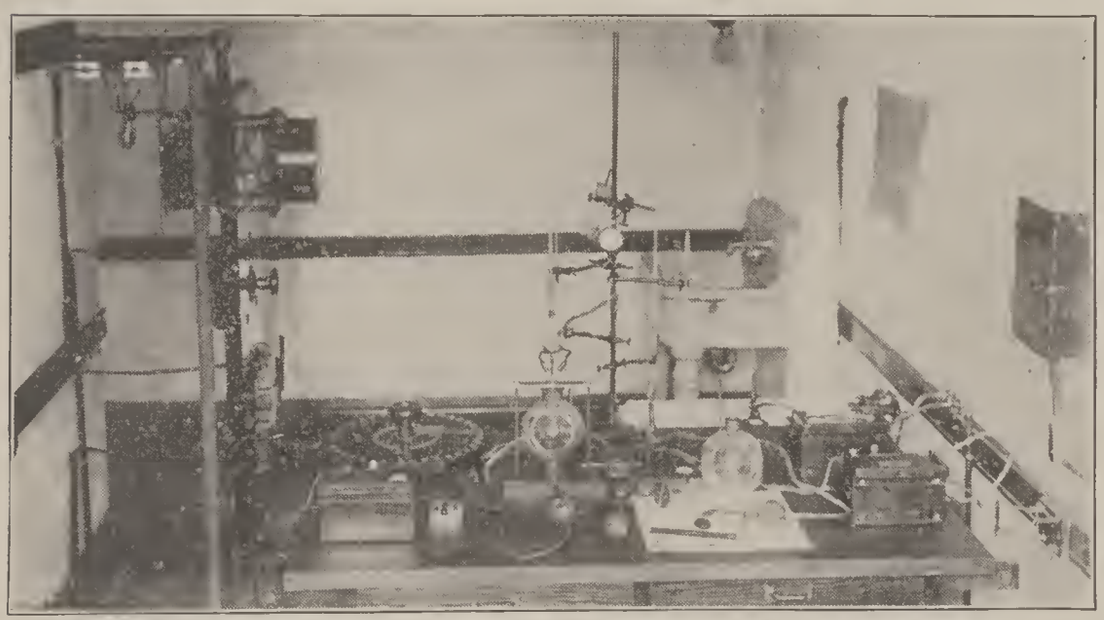
The Explosives Laboratory contains both hand and mechanical screens for sizing black powder. By the use of sectional drill-holes practice is given in the different ways of loading, and by the use of dummy cartridges and exploders all the operations of blasting can be demonstrated with perfect safety.

The drafting room contains a large collection of photographs, mine maps, plans of mining machinery and the catalogs of manufacturers of mining machinery, all card-indexed. There is also a library of reference books upon design. The mine surveying equipment is also kept here, as well as the files of principal mining magazines.

The museum contains samples of washed coal from nearly every washery in Illinois; also coke, briquets, and products of ore concentration, together with metallurgical products, models of mine workings, mine timbering, signaling and lighting devices, and haulage and hoisting appliances.

SAFETY LAMP AND COAL DUST LABORATORY

The safety lamp, mine gas and explosibility of dust laboratory contains an assortment of safety and electric mine lamps; magnetic-locking and lighting devices, and the most improved appliances for testing lamps. It also contains apparatus for gas analysis and a photometer room for determining the lighting power of mine lighting devices.



The coal dust laboratory is equipped for the determination of the relative explosibility of coal dust and other fine materials.

MINE RESCUE STATION

Since 1909, the Department of Mining Engineering, the State Geological Survey, and the United States Bureau of Mines have jointly maintained a mine rescue station at the University. The Illinois Mine Rescue Station Commission has also placed on exhibition at the station, breathing apparatus and other safety devices.

A TYPICAL VIEW ON THE UNIVERSITY CAMPUS

ILLINOIS PRINTING CO., DANVILLE, ILL.